

REMARKS

This is a full and timely response to the non-final Office Action of May 28, 2004 (Paper No. 05192004). Reconsideration of the application in light of the foregoing amendments and the following remarks is respectfully requested.

Pending claims 8-21, 24, 46 and 47 are currently withdrawn subject to a restriction requirement. Claims 1-7, 22, 23, 25-45 and 48-56 are currently pending for the Examiner's consideration.

In the recent Office Action, claims 36, 48-53, 55 and 56 were allowed. Applicant wishes to thank the Examiner for the allowance of these claims. The Examiner also indicated the presence of allowable subject matter in claims 29 and 30. Consequently, claim 29 has been amended herein to become an independent claim and should now be in condition for allowance based on the Examiner's indication of allowable subject matter.

With regard to the prior art, claims 35 and 37-45 were rejected under 35 U.S.C. § 112, first paragraph, for allegedly introducing new matter. Applicant respectfully disagrees.

Claim 35 was amended to recite that a modified inkjet print head "no longer contains nor dispenses ink." According to Applicant's specification, "[l]ight-emitting centers are fabricated at the locations of the firing resistors of the ink jet printheads on the ink jet cartridges. Orifice plates may include lenses at the orifices or nozzle locations that are designed for a desired working distance and wavelength of the light source." (Applicant's Spec., p. 11). Applicant respectfully submits that one of skill in the art would certainly understand that, if lenses are placed in the orifices of the printhead, the print head can no longer dispense and would not contain ink.

However, to expedite the allowance of this application, Applicant has cancelled the phrase in question from claim 35. Consequently, following entry of this amendment, claims 35 and 37-45 should be in condition for allowance.

Claim 54 was rejected under 35 U.S.C. § 112, second paragraph. Applicant has accordingly amended claim 54 in response to the comments in the Action and now believes claim 54 to be in compliance with § 112 and in condition for allowance. Notice to this effect is respectfully requested.

With regard to the prior art, claims 1-5 and 22 have been rejected under 35 U.S.C. § 103(a) as unpatentable in view of the combined teachings of U.S. Patent No. 5,303,141 to Batchelder, et al. ("Batchelder") and U.S. No. 5,980,812 to Lawton ("Lawton"). Claims 6, 7 and 23 have been rejected under § 103 in view of the combined teachings of Batchelder, Lawton and U.S. Patent No. 6,214,276 to Gelbart ("Gelbart"). For at least the following reasons, these rejections are respectfully traversed.

Claim 1 recites

A method for fabricating an article using photo-activatable building material, comprising the steps of:

- depositing a uniform layer of the photo-activatable building material;
- scanning the layer using a plurality of light-emitting centers, wherein the light-emitting centers are moved over the layer and selectively activated to selectively photo-activate the layer of photo-activatable building material in accordance with fabrication of said article; and

- repeating the steps of depositing a uniform layer, with each layer being applied over an immediately previous layer, and scanning the layer with the plurality of light-emitting centers to selectively photo-activate the building material until the article is fabricated.

In contrast, neither Batchelder nor Lawton teaches or suggests “scanning the layer using a plurality of light-emitting centers, wherein the light-emitting centers are *moved over the layer* and selectively photo-activate the layer of photo-activatable building material in accordance with fabrication of said article,” as claimed. (emphasis added).

In response, the recent Office Action alleges that “[b]oth Batchelder and Lawton use selective laser curing of built up layers to form three-dimensional solid objection.” (Paper No. 05192004). This is both incorrect and irrelevant to the point being made.

Batchelder *does not* teach or suggest *selective* laser curing of built up layers. Batchelder teaches that an application of light from a single, non-moving source is used to cure extruded material. (Batchelder, col. 7, lines 20-25). The extruded material is not *selectively* exposed, but is entirely exposed.

More importantly, Applicant is not just arguing selective curing of the build material. Rather, Applicant is very clearly pointing out that neither Batchelder nor Lawton teaches or suggests “scanning the layer using a plurality of light-emitting centers, wherein the light-emitting centers are *moved over the layer* and selectively photo-activate the layer of photo-activatable building material.” (emphasis added).

As shown above, Batchelder teaches a non-selective, *non-moving* light source for exposing extruded material. Lawton teaches using a single, *non-moving* light source with a scanning mirror to cure building material. (Lawton, col. 6, lines 52-54).

The Office has failed to indicate how or where the cited prior art references teach or suggest “scanning the layer using a plurality of light-emitting centers, wherein the light-emitting centers are *moved over the layer* and selectively photo-activate the layer of photo-activatable building material.” (emphasis added). Applicant respectfully requests that the

Office clearly explain where in the combination of Batchelder and Lawton such subject matter is taught.

Until such a showing is made, the combined teachings of Batchelder and Lawton fail to teach or suggest the features recited in claim 1. "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)." M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). Therefore, the rejection of claims 1-7 should be reconsidered and withdrawn.

Moreover, the light exposure systems taught by Batchelder and Lawton are largely incompatible. It is unclear how or why one of skill in the art would combine the teachings of these two references. In response to this point, the recent Office Action without support states that "the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference." (Paper No. 05192004, p. 10). This is an erroneous view of the applicable law.

If a reference is to be modified with structure taught in another reference, the result has to be a functioning, compatible system. *Gillette Co. v. S.C. Johnson & Son, Inc.*, 919 F.2d 720 (Fed. Cir. 1990) ("An analysis of obviousness of a claimed combination must include consideration of the results achieved by that combination."). "If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)." M.P.E.P. § 2143.01. "If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion

or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)." M.P.E.P. § 2143.01.

In the present case, Batchelder calls expressly for a system in which a large amount of light is used to quickly cure an extruded object before it loses its extruded shape. In contrast, Lawton uses a mirror to more slowly scan light from a single light source over building material.

The Office has entirely failed to explain how these teachings would or could be combined into a functioning system and how that working system could possibly be read on by claim 1. For at least this additional reason, the combination of Batchelder and Lawton is insufficient and should be reconsidered and withdrawn.

Claim 22 recites:

A method for fabricating an article using photo-activatable building material wherein light-emitting diode polymerization is utilized, comprising the steps of:
laying down a uniform layer of photo-activated polymer with a thickness suitable for selective photo-activation;
polymerizing a cross section of the article by selectively exposing the layer of photo-activated polymer to light;
raising an applicator used to lay down said layer of photo-activated polymer;
and
repeating laying down layers and polymerizing a cross section of the article in each layer until the article is fabricated.

In contrast, neither Batchelder nor Lawton teach or suggest the combination of "laying down a uniform layer photo-activated polymer" and then "raising an applicator used to lay down said layer of photo-activated polymer" as claimed.

Batchelder does not teach or suggest an applicator that lays down a uniform layer of building material. Rather, Batchelder teaches depositing successive drops of material. The recent Office Action points out that the Batchelder extrusion nozzle is moved along three

axes (X, Y and Z) to deposit drops of material. (Col. 6, lines 25-28) (Paper No. 05192004, p. 11). This, however, simply confirms that Batchelder does not lay down a uniform layer of build material. In fact, the section of Batchelder cited here refers to the formation of “arcuate spans” of extruded material. (Col. 6, lines 22 and 28). Thus, the recent Action helps confirm that Batchelder does not teach or suggest using an applicator to deposit a uniform layer of building material, but rather to extrude a particular shape that is then rapidly cured. Thus, Batchelder does not teach or suggest depositing a uniform layer of polymer and *then* raising an applicator used to lay down *that* uniform layer of polymer so that the applicator can repeat the process of laying down another uniform layer of polymer, as claimed.

Similarly, Lawton fails to teach or suggest the claimed subject matter. Lawton teaches a doctor blade (104) that scraps building material into a recess in a piston (102). Thus, Lawton does not teach or suggest an applicator “used to lay down [a] layer” of building material that is then “raised” prior to deposition of the next layer.

Since neither reference teaches the claimed subject matter, the combined teachings of Batchelder and Lawton fail to teach or suggest “laying down a uniform layer photo-activated polymer” and “raising an applicator used to lay down said layer of photo-activated polymer” as claimed in claim 22. “To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).” M.P.E.P. § 2143.03. Accord. M.P.E.P. § 706.02(j). Therefore, the rejection of claims 22, 23 and 25 should be reconsidered and withdrawn.

Claims 25-28 and 31-34 were rejected as unpatentable under 35 U.S.C. § 103(a) over the combined teachings of Batchelder, Lawton, Gelbart, U.S. Patent No. 5,764,263 to Lin

“Lin” and U.S. Patent No. 4,029,006 to Mercer “Mercer.” For at least the following reasons, this rejection is respectfully traversed.

Claim 26 recites:

A method for fabricating an article using photo-activatable building material, the method comprising:

depositing a uniform layer of the photo-activatable building material to a preselected surface with an applicator;

scanning the layer using a plurality of light-emitting centers to selectively photo-activate the layer of photo-activatable building material in accordance with fabrication of said article;

repeating the steps of depositing a uniform layer, with each layer being applied over an immediately previous layer, and scanning each layer with the plurality of light-emitting centers to selectively photo-activate the building material until the article is fabricated;

curing the article in a curing oven following fabrication; and

automatically transporting the article between said applicator and said curing oven with a transport system.

(emphasis added).

Similarly, claim 34 recites:

A method for fabricating an article using photo-activatable building material, the method comprising:

depositing a uniform layer of the photo-activatable building material to a preselected surface with an applicator;

scanning the layer using a plurality of light-emitting centers to selectively photo-activate the layer of photo-activatable building material in accordance with fabrication of said article;

repeating the steps of depositing a uniform layer, with each layer being applied over an immediately previous layer, and scanning each layer with the plurality of light-emitting centers to selectively photo-activate the building material until the article is fabricated;

rinsing the article in a rinsing unit following fabrication; and

automatically transporting the article between said applicator and said rinsing unit with a transport system.

(emphasis added).

As demonstrated above, Batchelder and Lawton fail to teach or suggest scanning a layer of building material with “a plurality of light-emitting centers to selectively photo-activate the layer of photo-activatable building material.” The Office Action does not allege

or suggest that Gelbart, Lin or Mercer teach or suggest the claimed scanning with a plurality of light-emitting centers. Therefore, the cited combination of prior art fails to teach or suggest at least the “scanning” element of claims 26 and 34. Therefore, the rejection of claims 26-34 should be reconsidered and withdrawn.

In the final Office Action, claims 46 and 47 were declared to be drawn to a non-elected invention and were withdrawn from consideration. This position is maintained in the current Office Action. Applicant again respectfully renews traverse of this improper withdrawal of claims 46 and 47.

Applicant pointed out that claims 46 and 47 and drawn to the same invention as recited in pending claims 1 and 26, respectively. The Office Action responds by stating that “the process of claim 1 could be practiced by another and materially different apparatus than that of claim 46, such as a modified ink jet printer.” (Paper No. 05192004, p. 10). Applicant points out that claim 46 is a means-plus-function claim and, as such, reads on and includes a modified ink jet printer as disclosed in Applicant’s specification as a means for performing the recited functions. Therefore, the a modified ink jet printer is not different from the apparatus of claim 46, as the Action incorrectly contends, a modified ink jet printer is subject matter covered by the recitations of claim 46. The same relationship exists between claims 26 and 47

MPEP § 806.05(e) expressly states that: “If the apparatus claims include a claim to ‘means’ for practicing the process, the claim is a linking claim and must be examined with the elected invention.” (emphasis added). In the present case, claims 46 and 47 are “means” claims reciting means for performing the method steps recited in claims 1 and 26,


respectively. Thus, according to the MPEP, claims 46 and 47 "must" be examined and cannot be withdrawn from consideration.

Therefore, Applicant again requests the reinstatement and examination of claims 46 and 47.

For the foregoing reasons, the present application is thought to be clearly in condition for allowance. Accordingly, favorable reconsideration of the application in light of these remarks is courteously solicited. If the Examiner has any comments or suggestions which could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number listed below.

Respectfully submitted,

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